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ABSTRACT

Both the Institutional Functioning Inventory (IFI) and the College and University Scales (CUES) are self-study and evaluation instruments. Because the IFI is concerned primarily with dimensions of interest to faculty, while CUES reflects aspects of campus life more important to students, these two measures are frequently used together to obtain a complete perspective. It may be disconcerting when the user finds that each employs a different scoring technique. The IFI is scored in the typical measurement fashion where each item answered in the keyed direction is scored "1" and those in a non-keyed direction are scored "0." The scoring system for CUES is quite different; it utilizes the "66+/33-" method, a technique which takes into account only those items about which there is a consensus of two-to-one or greater among the respondents. IFI data from the 37 institutions comprising the IFI normative group was rescored using the CUES method. The comparison of the two scoring techniques indicated that the two methods are practically identical in terms of the resulting institutional profiles. However, a variety of reasons are given for the retention of the traditional scoring method with IFI. (CK)

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RESEARCH MEMORANDUM

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A NOTE ON THE COMPARABILITY OF ALTERNATIVE SCORING METHODS FOR THE INSTITUTIONAL FUNCTIONING INVENTORY

Rodney T. Hartnett

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Educational Testing Service
Princeton, New Jersey
January 1971

A NOTE ON THE COMPARABILITY OF ALTERNATIVE SCORING METHODS FOR THE INSTITUTIONAL FUNCTIONING INVENTORY

Rodney T. Hartnett

The Institutional Functioning Inventory (IFI) is an institutional self-study and evaluation instrument by which colleges or universities can describe themselves in terms of various dimensions judged to be important and relevant for the well-being of institutions of higher education. Certain members of the college community--usually members of the faculty--are asked to report their perceptions of various emphases and characteristics which seem to highlight their institutional environment.[1]

A similar purpose is served by the College and University Environment Scales (CUES), an instrument which has proved useful for describing college environments since its publication in 1963.[2] CUES, however, was designed principally for use with college students. Furthermore, these two instruments differ not only in that perceptions are obtained from different reporters, but also in the kinds of institutional variables and emphases that are tapped. Though both instruments measure some campus characteristics of general interest to both students and faculty, the scales in CUES quite naturally tend to reflect dimensions of campus life that are more important to students, such as Community (Is it a friendly, cohesive campus?) and Propriety (Is the campus atmosphere proper and conventional?), whereas the scales in the IFI tend to

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[1]Peterson, R. E., Centra, J. A., Hartnett, R. T., and Linn, R. L. Institutional Functioning Inventory: Preliminary Technical Manual. Princeton, N. J.: Educational Testing Service, 1970.

[2]Pace, C. R. College & University Environment Scales (CUES) Second Edition Technical Manual. Princeton, N. J.: Educational Testing Service, 1969.

reflect dimensions more important to members of the faculty, such as Freedom (academic freedom) and Concern for Advancing Knowledge (the degree to which the institution emphasizes research).

Nevertheless, both instruments appear to be getting at somewhat different aspects of the same general question: "What is this place like?" Consequently they can and have been used conjointly by institutions seeking to gain a complete picture of how their institution is perceived by various relevant members of the campus community.

Given this situation, users of these two measures of college environments may find it somewhat disconcerting that each uses a different method of scoring. The IFI is scored in the typical measurement fashion, where each item answered in the keyed direction is scored "1" and those in a non-keyed direction are scored "0." Each respondent's score, therefore, is the number of items answered in the keyed direction.[3] Scores of individuals are then averaged to give an institutional score on the scale in question.

The scoring system for CUES, however, is quite different, at least in appearance. It is scored by means of the "66+/33-" method, a technique which takes into account only those items about which there is a consensus of two-to-one or greater among the respondents (students). The "66+/33-" method consists of adding the number of items answered by 66 percent or more of the students in the keyed direction, subtracting the number of items answered by 33 percent or fewer of the students in the keyed direction, and adding a constant to the difference in order to eliminate negative scores. The rationale for such a procedure, as explained in the CUES manual, is as follows:

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[3]For details regarding IFI scoring, see Peterson, et al., op.cit.

> First, we regard CUES as an opinion poll. The percent of people agreeing or disagreeing with a statement is the commonly accepted manner of reporting opinion poll results. Second, we are interested only in what is judged to be characteristic of the environment, and therefore we have to decide how much agreement there needs to be in order to justify calling something characteristic. If half the students agree and half disagree, then obviously the result cannot be described as characteristic because we define the word characteristic to mean dominant, not average. Third, continuing this rationale, the score for a scale is determined by the number of statements that have been judged as characteristic of the environment, with characteristic defined as a level of consensus at least two-to-one or greater.[4]

Such reasoning, if defensible for CUES, is equally compelling for the IFI. If it is true that the "66+/33-" scoring method (hereafter called the CUES method) is a better procedure for reporting institutional scores, then such a technique should be employed with the IFI. But does it make any difference? Though the arguments made for the CUES method are conceptually sound, the question remains: Would such a scoring procedure actually result in a different rank-ordering of institutions than one obtained from the currently employed IFI scoring method?

The Findings

IFI data from the 37 institutions comprising the IFI normative group were rescored using the CUES method. Specifically, for each institution all items answered in the keyed direction by 33 percent or fewer of the faculty members were subtracted from the total number of items answered by 66 percent or more in the keyed direction, and a constant of 12 (which is the number of items in each IFI scale) was added to this difference. Thus, scores obtained by the CUES method could theoretically range from 0 to 24, whereas scores obtained in the "regular" fashion could theoretically range from 0 to 12.

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[4]Pace, op.cit., p. 14.

The 37 IFI means calculated by the CUES method were then correlated with the means obtained via the regular procedure. Those correlations are presented in Table 1.

It is clear that the rank-ordering of the 37 institutions on any of the scales is barely affected by the different scoring procedure. The lowest correlation between the two sets of institutional means is .94, which occurs for two IFI scales. Seven of the 11 correlations are .97 or higher.[5] Furthermore, the interrelationships among the 11 scales are only minimally influenced by the CUES scoring procedure. As indicated in Table 2, the intercorrelations among the scales scored by the traditional method are strikingly similar to the correlations among the scales scored by the CUES method. The largest difference occurs for the HD/IS correlations, where the difference between the two squared correlations (rounded) is .14 ($.71^2$-$.60^2$).

Conclusions

A comparison of the scoring techniques--the traditional psychometric method and the CUES method--as applied to the Institutional Functioning Inventory, indicates that the two methods are practically identical in terms of the resulting institutional profiles. Thus, in terms of an institution's concern about its mean scale scores relative to other institutions, the choice of scoring procedure is not important. However, in view of the nearly identical results, there are other reasons for preferring the traditional psychometric technique.

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[5]It is perhaps worth noting that these correlations are similar in magnitude to CUES intercorrelations reported by Pace in the preliminary technical manual, where the two scoring techniques employed were the traditional psychometric method and a method similar but not identical to the "66+/33-" technique described above. For the five CUES scales the correlations ranged from .88 to .98. See Pace's College and University Environment Scales: Preliminary Technical Manual. Educational Testing Service, 1963.

Table 1

Correlations between IFI Scale Means

Obtained from Alternative Scoring Procedures

Scale	Correlation between Institutional Means
Intellectual-Aesthetic Extracurriculum (IAE)	.98
Freedom (F)	.97
Human Diversity (HD)	.97
Concern for Improvement of Society (IS)	.98
Concern for Undergraduate Learning (UL)	.96
Democratic Governance (DG)	.97
Meeting Local Needs (MLN)	.97
Self-Study and Planning (SP)	.94
Concern for Advancing Knowledge (AK)	.99
Concern for Innovation (CI)	.96
Institutional Esprit (IE)	.94

Table 2

IFI Scale Intercorrelations Using Alternative Scoring Methods[a]

		Intercorrelations Based on CUES Scoring Method										
		IAE	F	HD	IS	UL	DG	MLN	SP	AK	CI	IE
Inter-correlations Based on Traditional Scoring Method	IAE		57	53	62	-04	40	-07	22	58	48	20
	F	50		71	72	06	41	-13	16	46	52	02
	HD	55	73		60	-15	31	02	04	46	39	-19
	IS	60	71	71		00	52	02	23	58	67	16
	UL	-10	22	-08	04		30	-34	12	-57	09	29
	DG	34	52	39	56	41		-18	40	15	59	56
	MLN	-05	-25	08	02	-40	-21		12	-04	-01	-04
	SP	22	18	15	34	17	42	21		05	62	57
	AK	62	41	49	59	-53	15	01	09		40	05
	CI	39	57	48	70	28	65	-09	66	35		45
	IE	17	08	-11	14	33	54	-09	49	07	36	

[a]Decimals omitted from correlations. See Table 1 for complete names of scales.

First, the traditional scoring technique enables users of the data to easily obtain other useful, descriptive statistical measures not possible with the CUES technique. Measures of the distribution of scale scores (e.g., average deviation, standard deviation, variance), for example, provide illuminating data about the variety of perceptions held by members of the observer group (e.g., faculty, students) and serve as another gauge of consensus among the reporters on the total scale. (The IFI manual, it should be noted, provides a norm-group distribution of institutional standard deviations for each scale to enable users to compare the spread of scores at their institution with those at other colleges.) Furthermore, information about reporter agreement on each item (the basis for the CUES technique) is still provided with the item analysis information that is part of the routine score reporting service for the IFI.

Second, there is the simple fact that the CUES method may be unfamiliar, perhaps even suspect, to many who will be interpreting data gathered by means of the IFI. Since most research and measurement people (including institutional researchers) are accustomed to thinking about test scores and inventory results in terms of the typical measures of central tendency and their accompanying indicators of the variance or spread of scores, it's quite possible that the CUES method of scoring might result in score misinterpretation. Hence, for the convenience of the users of the IFI, the traditional scoring method would seem to be preferable.

Finally, the traditional scoring technique provides the research oriented user of the IFI with a wider array of methodological tools. For example, correlations between various individual respondent characteristics (e.g., teaching load, professorial rank) and IFI scales can be computed with scores obtained in the traditional way but not for scores resulting from the CUES method.